bio-protocol Preprint

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ECG recordings

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Updated date: Jul 1, 2020

An abbreviated version of this protocol was published in eLIFE in Mar 2019

A calcium transport mechanism for atrial fibrillation in Tbx5-mutant mice

DOI: 10.7554/eLife.41814

Detailed protocol

1) Anesthetize mouse with isoflurane
2) Make a horizontal skin incision and create a small pocket under the skin in the back of the mouse
3) Make small skin incisions in the upper right and lower left thorax
4) Place the telemetry device (ETA-F10; DSI) in the pocket under the skin on the back
5) Thread one lead from the back incision to the right thorax incision and the other lead to the left thorax incision. Suture the exposed metal portion of the leads onto the muscle layer of the thorax where the incisions are. Secure the leads down by adding additional sutures on the covered parts of the lead to the muscle layer.
6) Close all incisions
7) Place the mouse in a cage with food/ water onto a transmitter plate (ADI instruments DSI00101-P) and allow the mouse to recover for 12 hours
8) Preview the recording and ensure the signal is correctly sampled and at the correct amplitude. Rename the channel with the mouse genotype and begin recording
9) Stop recording and save after 24 hours
10) For analysis, scan through the entire trace at 100k:1 horizontal scaling and select 20-30 minute regions with as uniform as possible signal
11) For each section, use the waterfall plot under ECG analysis to view if there are p-wave abnormalities indicative of AF in that region
12) Confirm the irregular p-waves are true p-waves instead of noise using chart view
13) Export the data from these sections for Poincaré plots

How to cite:（Readers should cite both the Bio-protocol preprint and the original research article where this protocol was used）

1. Dai, W. and Weber, C. (2020). ECG recordings. Bio-protocol Preprint. bio-protocol.org/prep360.
2. Dai, W., Laforest, B., Tyan, L., Shen, K. M., Nadadur, R. D., Alvarado, F. J., Mazurek, S. R., Lazarevic, S., Gadek, M., Wang, Y., Li, Y., Valdivia, H. H., Shen, L., Broman, M. T., Moskowitz, I. P. and Weber, C. R.(2019). A calcium transport mechanism for atrial fibrillation in Tbx5-mutant mice. eLIFE. DOI: 10.7554/eLife.41814

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